

**DEPARTMENT OF TRANSPORTATION**

DIVISION OF ENGINEERING SERVICES

Office of Structural Materials

Quality Assurance and Source Inspection



Bay Area Branch  
690 Walnut Ave. St. 150  
Vallejo, CA 94592-1133  
(707) 649-5453  
(707) 649-5493

Contract #: 04-0120F4Cty: SF/ALA Rte: 80 PM: 13.2/13.9File #: 69.28**WELDING INSPECTION REPORT****Resident Engineer:** Pursell, Gary**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-010527**Date Inspected:** 19-Nov-2009**Project Name:** SAS Superstructure**OSM Arrival Time:** 1900**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 700**Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island **Location:** Shanghai, China**CWI Name:** See Below**CWI Present:** Yes No**Inspected CWI report:** Yes No N/A**Rod Oven in Use:** Yes No N/A**Electrode to specification:** Yes No N/A**Weld Procedures Followed:** Yes No N/A**Qualified Welders:** Yes No N/A**Verified Joint Fit-up:** Yes No N/A**Approved Drawings:** Yes No N/A**Approved WPS:** Yes No N/A**Delayed / Cancelled:** Yes No N/A**Bridge No:** 34-0006**Component:** Tower Fabrication**Summary of Items Observed:**

CWI Inspectors: Mr. Du Zhiqun, Mr. Guo Peng

On this date CALTRANS OSM Quality Assurance (QA) Inspector, Mr. Paul Dawson, arrived on site at the Zhenhua Port Machinery Company (ZPMC) facility at Changxing Island, in Shanghai, China, for the purpose of monitoring welding and fabrication of the San Francisco / Oakland Bay Bridge (SFOBB) components. This QA Inspector observed the following:

## Tower Bay 10

This QA Inspector observed Mr. Zhang Yugui, stencil 048627 is using flux cored welding process WPS-B-T-2231-TC-U5-F to complete South tower splice plate weld SSD1-SPSA4-22-2B. This QA Inspector observed ZPMC QC Inspector Mr. Yuan Hui Gang monitoring this welding and this QA Inspector observed a welding current of approximately 362 amps and 31.0 volts. ZPMC QC Inspector Mr. Yuan Hui Gang informed this QA Inspector that this welding current appears to be too high and he used his welding amperage equipment to confirm the welding current was too high and Yuan Hui Gang then adjusted the welding current to approximately 320 amps. ZPMC CWI Mr. Du Zhiqun informed this QA Inspector that the welding current changes are caused by another person who is using air carbon arc gouging equipment, which changes the electric power supply and welding current. This QA Inspector observed the base material appears to have been preheated using electric heating elements. Items observed on this date do not completely appear to comply with applicable contract documents.

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This QA Inspector observed ZPMC welder Ms. Wang Yudi, stencil 040268 is using shielded metal arc welding procedure WPS-B-T-2112P to make tower strut weld ND1-A6002-13-41. This QA Inspector observed a welding current of approximately 200 amps and the welding electrodes are stored in an electrically heated electrode storage container which is warm to the touch and it appears to be connected to the welding power supply cable. This QA Inspector observed that ZPMC personnel had used electric heaters to preheat the base material temperature adjacent to where the welds were to be deposited. Items observed on this date appeared to generally comply with applicable contract documents.

The QA Inspector observed ZPMC welder Mr. Fau Chunlei stencil 040491 is using welding procedure WPS-345-SMAW 3G(3F)-Repair make a shielded metal arc weld repairs at various locations on the exterior of north tower lift 1 skin plates as directed on critical weld repair TCWR-395. This QA Inspector observed a welding current of 158 amps. Prior to welding this QA Inspector observed ZPMC personnel using a torch to preheat the base material adjacent to where the weld was to be deposited to a minimum of 200 degrees Celsius. Items observed by the QA Inspector appear to comply with project specifications.

This QA Inspector observed ZPMC welder Ms. Pu Xuezheng, stencil 052075 is using flux cored welding procedure WPS-345-FCAW-2G(2F)-Repair to add weld material to extend the length of north tower first lifting bottom plate bearing stiffeners as detailed on critical weld repair TCWR0463-R0. This QA Inspector observed a welding current of approximately 285 amps and 29.0 volts. This QA Inspector observed ZPMC QC CWI Mr. Du Zhiqun is monitoring the maximum interpass temperature and additional stiffener welds are not being made until the base metal is allowed to cool to an acceptable temperature. Items observed by this QA Inspector appear to be progressing in compliance with project specifications.

This QA Inspector observed ZPMC welder Mr. Wang Gungzhi, stencil 050041 is using flux cored welding procedure WPS-345-FCAW-2G(2F)-Repair to add weld material to extend the length of north tower first lifting bottom plate bearing stiffeners as detailed on critical weld repair TCWR0463-R0. This QA Inspector observed a welding current of approximately 280 amps and 31.0 volts. This QA Inspector observed ZPMC QC CWI Mr. Du Zhiqun is monitoring the maximum interpass temperature and additional stiffener welds are not being made until the base metal is allowed to cool to an acceptable temperature. Items observed by this QA Inspector appear to be progressing in compliance with project specifications.

This QA Inspector observed ZPMC welder Ms. Dong Yumei, stencil 054009 is using flux cored welding procedure WPS-345-FCAW-2G(2F)-Repair to add weld material to extend the length of north tower first lifting bottom plate bearing stiffeners as detailed on critical weld repair TCWR0463-R0. This QA Inspector observed a welding current of approximately 290 amps and 30.2 volts. This QA Inspector observed ZPMC QC CWI Mr. Du Zhiqun is monitoring the maximum interpass temperature and additional stiffener welds are not being made until the base metal is allowed to cool to an acceptable temperature. Items observed by this QA Inspector appear to be progressing in compliance with project specifications.

This QA Inspector observed ZPMC welder Ms. Dong Yuqin, stencil 053116 is using flux cored welding procedure WPS-345-FCAW-2G(2F)-Repair to add weld material to extend the length of north tower first lifting bottom plate bearing stiffeners as detailed on critical weld repair TCWR0463-R0. This QA Inspector observed a welding current of approximately 265 amps and 30.5 volts. This QA Inspector observed ZPMC QC CWI Mr. Du Zhiqun is monitoring the maximum interpass temperature and additional stiffener welds are not being made until the base

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metal is allowed to cool to an acceptable temperature. Items observed by this QA Inspector appear to be progressing in compliance with project specifications.

Tower Bay 11

ZPMC issued "Inspection Notification Sheet" number 4685 informing QA that ZPMC has completed visual (VT), ultrasonic (UT) and magnetic particle (MT) inspections of spare strut WD1-A6003-1 welds and they are ready to be green tag released. This QA Inspector performed random ultrasonic inspections of the following welds: WD1-A6003-1-2B, WD1-A6003-1-4B and random magnetic particle inspection of the following welds: WD1-A6003-1-7B, -9B, -13, -15, -25, -28 and items observed appear to comply with AWS D1.5 UT, MT and VT inspection requirements. For additional information on these inspections see the TL6028 Magnetic Particle Test Report and the TL6027 Ultrasonic Test Report dated November 19, 2009. Later in the shift ABF personnel presented this QA Inspector with a Green Tag Release form and this QA Inspector concurred with this strut being green tag released.

This QA Inspector observed ZPMC welder Ms. Dong Jun Feng, stencil 202756 is using submerged arc welding procedure specification WPS-B-T-4221C-U2B-S2 to make groove weld ESTL4-2B/L-60A. This QA Inspector observed ZPMC QC CWI Mr. Guo Peng and ABF personnel monitoring the base material temperature with a 110 degree Celsius temperature indicating crayon. This QA Inspector observed a welding current of approximately 700 amps and 33.5 volts. Items observed by this QA Inspector appear to be progressing in compliance with project specifications.

The QA Inspector observed ZPMC welder Ms. Wu Aixiang, stencil 040772 is using submerged arc welding procedure specification WPS-B-T-4221C-U2B-S2 to make groove weld ESTL4-2B/L-60A. This QA Inspector observed ZPMC QC CWI Mr. Guo Peng and ABF personnel monitoring the base material temperature with a 110 degree Celsius temperature indicating crayon. This QA Inspector observed a welding current of approximately 650 amps and 32.8 volts. Items observed by this QA Inspector appear to be progressing in compliance with project specifications.

### **Summary of Conversations:**

See Above.

### **Comments**

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Eric Tsang phone: 150-0042-2372 , who represents the Office of Structural Materials for your project.

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<b>Inspected By:</b>	Dawson,Paul	Quality Assurance Inspector
<b>Reviewed By:</b>	Carreon,Albert	QA Reviewer

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